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CORE COMPETENCE, COMPETITIVE ADVANTAGE AND MARKET ANALYSIS: FORGING THE LINKS

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Abstract

Business people are receiving conflicting advice about the routes to competitive advantage. One set of theories says the key to advantage lies in market positioning: looking outside the firm. The “resource based” view exhorts business people to focus on their firms’ existing core competences and assets and how these might be expanded: looking inside the company. In this paper we focus on linking the two. We begin by tracing Porter’s cost and differentiation drivers back to the underlying assets on which they draw. Core competences are then viewed as catalysts which reduce the time and cost required for a business to expand its asset base in ways which allow it to deliver a more competitive product. The role of core competences is inherently dynamic: they help companies build new assets which can enhance their competitive advantage, enable them to meet the needs of changing markets and diversify into new ones.

It is then critical to know which types of assets, and hence which core competences, will be most advantageous to a firm in a particular market environment. We show empirically that part of the answer is to be found by analysing differences in the value of customer relationships, channel and process experience assets across different markets. By examining these differences, strategists can gain a better understanding of where corporate diversifiers can use their core competences to gain an advantage in competing for new business opportunities against independent start-ups; and where new ventures can succeed despite lack of access to corporate competences.

“The essential is invisible to the eye”

- A. de Saint-Exupéry, *The Little Prince*

Introduction

Today’s discussions about competitive advantage give conflicting advice to the business world¹. One school of thought views competitive advantage primarily as a function of inherent industry attractiveness and the market positioning of individual firms². It extols the benefits of looking “outward”. An alternative, and increasingly vocal, school emphasizes the bundle of resources in the form of tangible and intangible assets on which the firm can draw. It advises business people to focus on expanding their asset stocks and capabilities as the basis for sustained competitive advantage³. All too often, the debate between these “schools” has become a “dialogue of the deaf”.

Some proponents of the latter “resource-based” view hail it as a new paradigm, sweeping away the old under banners like *“Competing on Capabilities: The New Rules of Corporate Strategy”* (Stalk, Evans and Shulman, 1992). Others in turn proclaim that “the resource-based view cannot be an alternative theory of strategy...” (Porter, 1992: 108). In this paper we argue that there are important payoffs to be gained by linking and integrating the two views.

More specifically, we develop the following basic propositions concerning the links between core competences and competitive positioning based on market analysis:

- that analyses of markets and competitors have an important role in identifying which competences are key in a particular market environment. The critical competences will be those that can be used to build sources of advantage which are slow and costly for competitors to imitate. Traditional competitive strategy frameworks therefore help practitioners identify which competences to concentrate on.
- that transfer of core competences within a corporate group will provide a powerful basis for entry only in market environments with certain

make high profits in “unattractive” markets -- industry is not destiny. Large scale statistical studies of the “industry effect”, while they produce different quantitative estimates, generally agree that only between 16% and 19% of the total variations in profit between business units can be directly explained by industry variables (Schmalensee, 1985, Rumelt, 1991)⁵. Being in an “attractive” industry is no guarantee for success, while lack of industry attractiveness is not a sentence to poor performance.

Positioning within an industry (or, more correctly, a market) has therefore attracted increasing attention as a key determinant of firm profitability. Investigators like Porter (1980, 1985) have explained differential performance among competitors as a function of each firm’s success in harnessing the “drivers of competitive advantage” in a particular industry so as to place themselves in a more advantageous position relative to “industry forces” compared with rivals. If scale is an important driver of cost leadership, for example, those firms who operate efficient scale plants will be better positioned to protect their profits against the power of buyers or suppliers and the threat of substitutes or entrants compared with sub-scale competitors. If reliable, responsive service is a critical driver of differentiation advantage, those firms who can offer such service will be positioned to make higher profits than rivals who offer lower reliability or slower response times. Porter’s generic list of drivers is summarized on the right hand side of Table 1.

Market positioning - putting it into practice

To suggest to a manager that his company needs to produce in a large scale plant in order to be profitable in a particular industry is a bit like telling a pauper that if he wants to be rich he should operate a gold mine. Two questions immediately arise:

- how would I go about obtaining access to a gold mine or even a large scale plant? (What Bogaert, Martens and Van Cauwenbergh in this volume: figure 1, term “having” resources);
- what competences and skills do I need to successfully operate my gold mine or large scale plant once I have access to it? (Bogaert, Martens and Van Cauwenbergh, *op. cit.*, term these “doing” resources).

It is obvious that for “drivers of advantage” to become operational we need to consider their link to the assets which underpin them and, in turn, the process by which access to these assets are obtained and developed. Recently Porter (1992: 109) has recognized

To illustrate these relationships in more detail let us return to the example of scale as one of the most common drivers referred to in industry analysis. As a newly created business unit I might have been endowed with a large scale plant from my parent. Alternatively, blessed with sufficient financial capacity, I might go to a “turnkey” engineering company and contract for its construction. Even if I lack the financial capacity, the option of leasing large scale capacity may be available, as would be the case with a Boeing 747 needed by a start-up, long distance airline.

To reap the benefits of scale, however, I need more than just access to a large scale plant. I need to be able to operate it. This means access to the relevant process experience. I also need to be able to sell the mass output of such a plant. This may require assets such as access to distribution channels or the consumer brand franchise necessary to overcome customer risk aversion and search costs. Exploiting the benefits of even a relatively straightforward driver like scale is therefore apt to require the services of a complex bundle of tangible and intangible assets as a prerequisite.

The same is true for high and stable capacity utilization, another important cost driver. It can only be achieved to the extent that the firm has the thorough market knowledge, adequate information systems, customer loyalty and consistent quality to keep capacity as high as possible without incurring major bottlenecks.

The need to secure access to the right assets is equally compelling in the case of differentiation drivers. For example, a firm's ability to learn how to perform an activity better may be an important driver of uniqueness. A fast-learning firm could be more responsive to changing consumer needs and preferences. However, several assets are required in order to realize this advantage: good information technology systems to facilitate the collection, processing and dissemination of knowledge and information; motivated employees and a corporate culture geared towards stimulating learning and adapting to change; skilled managers able to facilitate the learning process etc.

Or take the example of Rockwell International in water meters: its policy choice to offer meters with superior reliability and durability would only pay off if it could obtain premium prices to more than offset the higher cost involved, e.g. by using more expensive bronze parts⁶. Higher prices in turn could only be obtained thanks to channel assets (in the forms of its efficient distribution network) and customer assets

- access may be obtained through sharing of the asset with a sister business unit, or alliance partner. Much of the literature on diversification has discussed the possibilities of sharing as a basis for entry into new, but related businesses. This route encompasses the sharing of tangible assets like facilities through to intangibles, such as debt capacity.
- finally, access may be obtained by accumulating the asset inside the company over time.

Asset services which are both tradeable and non-specific to a particular industry or product line can, in principle, be accessed via any of these routes. Relative costs will act as the deciding factor. Other assets will be freely tradeable, but industry-or product line-specific. In this case, sharing across business units in different industries will not be possible. Instead, the necessary asset services would have to be accessed through acquisition or accumulation, as illustrated in Figure 1. Tradeable assets of either of these types, however, are unlikely to act as a source of long-term, competitive advantage. This is because, to the extent that any such an asset afforded supernormal returns to one or more players, it would be quickly acquired by rivals. As a result, the initial competitive advantage would disappear. Where such assets were in limited supply, asset prices would be bid up, causing the rate of return to the holder to fall back to competitive levels when properly measured against the asset's new market value.

< FIGURE 1 ABOUT HERE >

Consider, then, asset services which are “non-tradeable” because the transactions costs in exchanging them through a market mechanism are prohibitive or the underlying factor market is non-existent or not functioning as an efficient market (Williamson, 1975, Barney, 1986, Dierickx and Cool, 1989). In this case the necessary asset services can only be obtained via endowment, sharing within an organisation, or by the business unit accumulating the asset.

Among these assets, those that can be accessed through endowment or sharing will tend to provide only short-lived competitive advantage. This is because most assets will be subject to erosion over time (see e.g., Eaton and Lipsey [1980]). Customer assets like brands, for example, will decay as new customers enter the market or former customers forget past experience or exit the market. The value of a stock of technical know-how will tend to erode in the face of innovation by competitors. Patents will expire. Thus, assets accessed through initial endowment or an initial asset base shared

Core Competences As Catalysts to Asset Accumulation

According to Dierickx and Cool (1989) there are four main factors which impede cheap and rapid asset accumulation:

- *time compression diseconomies* : the extra cost associated with accumulating the required assets under time pressure (the cost of compressing an activity in time). For example, it may take more than twice the amount of marketing to achieve in one year the same level of brand awareness as an established competitor may have been able to develop over a period of two years (other things equal). Similar relationships are likely to hold for other types of spending such as R&D costs relative to the rate of product or process improvement.
- *asset mass efficiencies* : some types of assets are more costly to accumulate when the firm's existing stock of that asset is small. It is more difficult, for example, to build the customer base of a credit card when it has few existing users. Prospective customers fear that if they sign up for an unknown card it will not be widely accepted at retail stores. Worse still, the average costs per transaction will be high due to lack of network economies, making it difficult to price the service competitively.
- *asset interconnectedness*: the lack of complementary assets can often impede a firm from accumulating an asset which it needs to successfully serve its market. For example, it may be harder for a firm that lacks a service network to improve its product quality. Without the in-house data on actual product performance its own service network would provide, the targeting of improvements becomes more difficult.
- *causal ambiguity* : the uncertainty associated with pinpointing which specific factors or processes are required to accumulate a required asset (the precise chain of causality is ambiguous)⁹. For example, a long list of key assets may explain the success of Wal-Mart in discount retailing in the U.S., but it is unclear which particular assets are really the critical ones. Even if a possible imitator could pinpoint these, it would still need to understand how to go about accumulating them¹⁰.

When the process necessary to accumulate an asset suffers from one or more of these impediments (or 'asset accumulation barriers'), all firms will face higher costs and

Second, it is always important to recognize that the value of a core competence depends on the value of the asset it helps to create. Thus, the more unique the customer benefits the resulting asset can deliver to a market, the more valuable is a firm's competence to build that asset. The danger of a purely "inward looking" approach to exploiting competences is that they will be used to create assets which add little to the company's market strength. For example, an excellent repair facility when what the market demands is a more reliable product.

Third, as we move away from the concept of asset sharing towards asset building and competence deployment, the definition of "business relatedness" changes. This helps unearth links between products like SLR cameras, fax machines, calculators, photocopiers, bubble jet printers and cell analyzers -- to name a few of Canon's businesses -- despite little scope for direct asset sharing and few common components. Moreover, it challenges us to extend traditional definitions of entry barriers built around the concept of markets separated by industry-specific assets¹³.

It is also worth noting that core competences may play a role in increasing the ability of a business unit to build its asset portfolio in other ways. Specifically:

- core competences may increase the potential for asset sharing (e.g. a company which licensed a process for manufacture of LCD's may be unable to adapt the line to produce components for a new product market. By contrast, a firm with a core competence in LCD manufacturing technology may be able to successfully increase the flexibility of the line to produce the new product on the same equipment)
- core competences may assist a business to successfully integrate assets acquired in the external market. (e.g. companies with certain organisational systems may be more successful in integrating acquisitions than others, some businesses have much greater competences in quickly operationalizing newly licensed technologies or in bringing new plants on stream after raising additional capital)

Leveraging off the core competences of others

It is not necessary for all of the competences a firm deploys in overcoming asset accumulation barriers to be in-house, or even within a corporate group. Many

operation we critical successfully underpinning this new way of better satisfying an existing market need.

In this new competitive game many of the existing assets of established players were rendered obsolete. In determining the right strategy to respond, however, it was critical to understand which existing competences could help put a new asset base in place as well as where new competences would be required. In the event players like Kodak were able to draw on their core competences to build a new business centering on sales of processing equipment and supplies like chemicals and treated papers to the “one hour” networks. Using these competences, augmented with additional ones, new assets from plant capacity through to sales, distribution and service networks were accumulated, along with the necessary experience to streamline the new business and improve its initial profitability.

Identification and deployment of its core competences, therefore, not only gives a company the opportunity to accelerate its rate of learning, share assets across the group, and assist it in the integration of newly acquired assets. The ability to recognize and transfer competences is also essential in allowing a firm to regenerate its asset base when faced with market “breakthroughs” which render existing assets obsolete by changing the rules of the competitive game.

Structural Indicators of the Importance of Core Competences

Thus far we have explored the links between market forces and core competences, as summarized in Figure 3. But these links pose two further questions:

- are their structural indicators that signal which core competences are likely to be a potential source of advantage in a particular market?
- are there any systematic relationships between market structure and the importance of access to these competences as a source of competitive advantage?

In what follows we provide a “first cut” empirical test to shed some light on these questions. It is clear that not all types of firm-specific assets will be relevant for every business or market. Our hypothesis is that differences between markets in the type of asset services required, the ways in which they can be obtained and the role of core

Access to core competences in rapidly building successful brands is thus likely to be more important where the product is purchased frequently. For items infrequently purchased, by contrast, the product is more likely to win customers on its independent merits since buyers' brand loyalty will have been eroded by time. Core competences in brand building will be less critical in environments where purchases are infrequent.

Frequency of purchase can be measured by the proportion of product lines belonging to a given industry for which the user generally purchases with a frequency of more than once per year (*FQPUR*).

3. *Product customization (products made to order) vs. standardization.* Successful made-to-order supply depends on a close relationship between manufacturer and customer with high exchange of information. Once transactions cost investments have been made with established businesses it will be more difficult for a new business to break into such a customer relationship. Not only is this a non-tradeable asset, but it is rather hard for newcomers to establish such relationship in a compressed timescale.

The importance of product customization, measured by the % of products classified to the industry which are made to order based on customer specifications (*TORDER*), therefore can be considered as another structural indicator for the importance of established customer contacts. The handicap it represents to newcomers to the industry will be significantly lower however for businesses that can benefit from existing customer relationships with other units in the same company (sharing). Likewise access to core competences in establishing, building and managing "made to order" customer relationship will also be more advantageous when *TORDER* is high.

4. *Major purchase.* This structural indicator refers to the possibility of winning new customers, based on their risk attitude and the informational characteristics of the buyer-seller relationship in the market. The risk associated with error for a major purchase may deter buyers from trying the product of a new business unit rather than continuing with established suppliers. New firms here may face a "chicken and egg" dilemma: customers are reluctant to buy from a supplier without a demonstrable track record, yet the new firm cannot develop that track record quickly without a rapid buildup of its installed base (cf. asset mass efficiencies). According to this argument, core competences in product launch, rapid ramp-up of production, and possibly brand creation would be especially advantageous in markets for "major" purchases.

proves to be. These considerations would argue that core competences in launching successful media campaigns would offer an advantage where brand awareness was important in underpinning competitive advantage.

However, access to media advertising and advertising agencies is quite open and competitive. Advertising can be bought by independent newcomers under almost equal conditions as by established firms. Moreover, since brands can be bought and sold, it may be possible to purchase the results of successful advertising in the past, thereby compensating for lack of core competences in rapidly building a new brand. Furthermore, high advertising outlays in an industry may be a symptom of relatively high rate of brand erosion, reducing the effective impact of brands as a source of competitive advantage¹⁶. It is therefore unclear as to whether core competences in media promotion will be systematically more important in advertising intensive markets which measure by expenditure on media advertising as a % of total sales value (*MEDIA*).

II. Channel relationship indicators

A second class of indicators refers to scope for building channel-related assets as a basis for competitive advantage. Such assets are likely to be more important in industries where a large portion of the products are sold through intermediaries and which rely heavily on 'push marketing'.

7. Channel dependence. We define channel dependence of a product as the degree to which the product requires gaining access to a distribution channel in order to reach the final customer, as opposed to the possibility of selling direct to the final user. To the extent that obtaining channel access and "shelf space" is easier for those with an established track record, we then would expect older firms to have a greater advantage where channel dependence was high, an advantage that is hard to trade on the open market, takes time to accumulate and is subject to substantial scale and scope economies.

Porter, 1976, for example, has argued that "for products sold through convenience outlets, ... gaining access to distribution actually becomes easier as the brand image matures." (page 28). This reflects the fact that where goods must be sold through retail convenience stores a certain density of sales required to make it economic to handle the brand.

the-art learning in their operation while older incumbents are left with less productive, earlier vintage equipment for which they cannot justify immediate replacement.

Higher labor intensity will thus increase the potential importance of staff experience as an intangible asset, giving older firms more of an advantage over young businesses. However, new start-ups belonging to a corporate group may benefit from the accumulated experience of the parent and, more importantly, from a core competence in labor force training and human resource development. *LK* measures labor intensity as total employment over the total book value of plant and equipment in the industry.

10. The skill level of the labor force. To the extent that skills are specific to the industry, young firms will be faced with the problem of hiring the necessary specialists and forming these recruits into a smoothly coordinated resource. Contracting and then successfully transferring complete teams with the necessary skills is notoriously difficult, particularly for businesses who are uncertain to survive.

In industries where groups of skilled staff are an important source of advantage, young businesses are likely to be at a greater handicap compared with established rivals who have gradually evolved an effective base of skilled staff with experience working together. This is not easy to acquire, given time-compression diseconomies and causal ambiguity. A core competence in developing skilled staff again may prove a tremendous benefit, helping corporate diversifiers to overcome this potential barrier. *SKILL* measures the proportion of "high-skilled" jobs in the industry as a percentage of total employment.

11. R&D. To the extent that success in R&D involves the accumulation of team experience which is largely non-tradeable, we could expect new businesses to be at a greater disadvantage as R&D intensity increases. But new corporate subsidiaries may benefit from access to a corporate level core competences in R&D management. Glaxo Plc., for example, is often thought to have a core competence in new drug development as already noted in Figure 2.

The benefits of corporate affiliation may be offset, however, if a high R&D intensity were to signal a state of rapid technical change. In this case, the value of the existing stock of R&D would erode quickly generating opportunities for younger firms to build

Table 2: Indicators of the Assets Required for Competitive Advantage

<i>Asset type & specific asset</i>	<i>Structural Indicator</i>	<i>Measure</i>
<i>Customer assets</i>		
• customer loyalty (existing)	<i>Media advertising</i>	MEDIA
• brand recognition (new customers)	<i>Product standardization</i>	TORDER
• installed base	<i>Purchase frequency</i>	FQPUR
	{ <i>Major purchase</i>	MAJOR
• service network	<i>Service requirement</i>	HSERV
• service quality	<i>Service requirement</i>	HSERV
<i>Channel assets</i>		
• distribution network	<i>Customer fragmentation</i>	MCUST
• dealer/distributor/retailer loyalty	<i>Channel dependence</i>	CHANNEL
	{ <i>Push marketing</i>	PUSH
<i>Process experience</i>		
• technological know-how	<i>Capital intensity</i>	K/E
• functional experience	<i>Skill level</i>	SKILL
• R&D capability/stock	<i>R&D requirement</i>	RDSLS
<i>General Assets</i>		
• human capital	<i>labor intensity</i>	L/K
	{ <i>skill level</i>	SKILL

businesses. We tested this effect through the variable UN, the degree of unionization in the industry, measured by the % of total employees belonging to a union.

Results

Comparing the survival rates between our samples of firms established in the past five years, we find that corporate affiliates enjoy almost 50% higher probability of survival than independent startups facing the same market environments. This is consistent with the hypothesis that access to the core competences accumulated within a corporate group helps a new subsidiary build its own asset base. The “corporate nursery” seems to work.

Theoretically at least, we might expect to find this benefit of corporate affiliation to continue even after a business became well established and accumulated its own specific asset base. Continued access to the core competences of the group should help an individual business to successively improve its assets and adjust to changing market demands faster than competitors, but in our sample it does not seem to do so. The ability of corporate affiliates to withstand the rough and tumble of competition is insignificantly different from established independent firms once both samples have been in business for more than five years.

If there are potential benefits of continued transfer of core competences between business units within a corporate group, we are unable to find evidence that these benefits are successfully being exploited. There are many possible explanations, including the emergence of a “not invented here” syndrome among established subsidiaries or the failure of the corporate centre either to identify the core competences of the group or to provide a mechanism to transfer them between business units (Pralahad and Hamel, 1990).

In order to further explore how the benefits of access to the assets and competences of the centre and sister business units varies corporate affiliation, equations (1) and (2) were estimated using Ordinary Least Squares. The statistical results are reported in Table 3.²⁰

Core competences and the corporate nursery

Looking first at our paired samples of businesses 5 or less years old, the following implications of these statistical results are notable:

- in markets where customer relationships are important and costly to build, as signalled by a high degree of customer fragmentation and made-to-order products, access to corporate group assets and competences brings significant benefits to young businesses as they struggle to accumulate the assets necessary to compete. Independent businesses which lack access to corporate competences are at a relative disadvantage in these types of environments (positive and significant coefficients on *MCUST* and *TORDER*).
- in markets with high channel dependence, corporate affiliates also have a substantial advantage over independent startups over the first five years after commencing operations (positive and significant coefficient on *CHANNEL*). This suggests that sharing of core competences in channel management across a corporation is important in helping new subsidiaries become successfully established in markets where the channel performance has a powerful impact on competitive advantage.
- there is some evidence that access to corporate skills is an advantage to a young business when media advertising plays a key role in the competitive armory, but this relationship is only weakly significant (positive coefficient on *MEDIA*).
- in markets where the product represents a “major” spending decision for the consumer, by contrast, independent startups are relatively better off. It seems that customers discount their existing relationships affiliates within the group and access to core competences when they make a very important purchase (negative and significant coefficient on *MAJOR*). This would accord with the theory of “non-convenience” goods which suggests that buyers will invest more in collecting objective information when they go to make such purchases (Porter, 1976).

and Hamel, 1990 that many corporations have failed to establish organisational mechanisms for the continuous transfer of their core competences between their SBUs.

Worse still, in markets where customers demand high levels of service, our results suggest that corporate affiliation can act as a long-run handicap to competitiveness (negative coefficient on *HSE* in equation 2). It may be that bureaucratic cultures in some large groups adversely show up as poor service when they establish new subsidiaries²².

Implications for the Practitioner

In this paper we have sought to forge links between the core competence framework and more traditional market-competitor analysis. The nature of these links has a number of important lessons for the business practitioner which may be summarized in four maxims.

1. *Understand exactly which competences can offer competitive advantage.* Competences which are widespread among rivals will seldom offer the firm a competitive edge. Those competences which enable a company to build assets that are slow and costly for competitors to imitate are the ones that count. These include assets like an efficient network of distributors, a response system to deliver made-to-order products, or a brand-loyal customer base that competitors can neither buy off the shelf nor copy quickly; and accumulated process knowhow that equipment suppliers cannot provide. It is the competences which can be deployed as catalysts in building these kinds of assets more quickly than competitors that are core to achieving competitive advantage.

This rule is also relevant to diversification. Competences will not underpin competitive advantage in a new market if the resulting assets can easily be replicated by incumbents or imitated by other entrants with similar capabilities.

2. *Start from the market in deciding how to use your core competences.* The fact that an asset is hard for competitors to imitate is obviously not enough for it to yield advantage. The market must also value the services that asset can deliver. There is little point, for example, exploiting a competence in channel management if customers are increasingly buying direct from the manufacturer. There would have been limited advantage in Kodak focusing its competences on building and managing yet larger scale, centralized film processing facilities when customers were demanding a one hour

that as new subsidiaries develop new competences, they become “teachers” within their corporate groups, not only students of established SBUs.

Exploiting core competences is not just a matter of looking inward. Just as traditional competitive strategy must identify how a recommended market positioning is to be achieved, and the assets required to do so, core competences must be assessed in terms of the market benefits they can be used to unlock. The real payoffs come from linking an understanding of competences with a rigorous analysis of market. Forging these links will enable a firm to use its core competences in order to build or leverage its strategic assets so as to become a pacesetter for cost reductions and product differentiation in the areas that really count for competitive advantage.

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Figure 2: Core Competences as Catalysts to Asset Accumulation

Characteristic	Examples of the Impact of Core Competences
Time Compression Diseconomies	<p>In the race to develop a low cost, high yield production line for small-screen, colour LCD television sets the makers of large screen sets found that money was a poor substitute for time. By drawing on its core competences in miniaturization, microprocessor design and material science -- all developed in its card calculator and watch businesses -- Casio was able to reduce the time compression diseconomies faced by other players. Its core competences acted as a catalyst to rapidly establishing the assets necessary to manufacture the LCD television product in high volume at low cost.</p>
Asset Mass Efficiencies	<p>Entrants commonly face a 'catch 22' in establishing a dealer network: - they cannot build their skills and systems for providing excellent dealer support without access to a large or dense network of dealers; yet they cannot establish such a network without the necessary skills and systems. Honda, however, was able to break this cycle when it entered the lawn mower business by using its core competences in dealer management originally developed in the motorcycle business to compensate for asset mass inefficiencies in building a new dealer network.</p>
Interconnected Asset Stocks	<p>Most entrants into the laser printer business lack crucial information on product reliability which is available to competitors with a well established service network. In seeking to improve their product and design capability they therefore suffer from interconnectedness of asset stocks. Canon, however, was able to reduce this disadvantage by deploying its core competence in the design of photocopier engines built on the basis of information from a large installed base and worldwide service network</p>
Causal Ambiguities	<p>The process of developing and gaining approval for a new pharmaceutical product has often been likened to a "jackpot game" -- the relationship between R&D spending and successful new products is highly ambiguous. Yet firms with core competences in drug development, such as Glaxo, appear to be able to develop systems and procedures which reduce this causal ambiguity. They must still play the proverbial "slot machine" in R&D, but compared with other potential entrants into a new market, their core competences allow them to improve their odds of success.</p>

¹See e.g. a series of Letters to the Editor, *Harvard Business Review* May-June 1992: 162-172.

²See, for example, Porter (1980, 1985).

³This characterization of the resource-based "school" is, of course, a simplification. Particular authors have explored different aspects of the relationship between internal capabilities and competitive advantage; see e.g. Wernerfelt (1984), Dierickx and Cool (1989), Prahalad and Hamel (1990), Grant (1991), Barney (1991), Lado *et al.* (1992). Terminology differs between researchers; Bogaert, Martens and Van Cauwenbergh (*This volume*) set out the various concepts and the relationships between them. For an overview of the resource-based view in contrast to a broader set of theories in a historical perspective, see Conner (1991).

⁴Crown Cork and Seal Company and the Metal Container industry, HBS Case Nos. 6-373-077 and 9378-024.

⁵These analyses were carried out at the level of the business unit or line of business, *not* at the firm level. It may also be noted that Rumelt's study attributes less than one percent of the total business profit variation to corporate effects.

⁶Rockwell Water Meters, HBS Case No. 9-841-060.

⁷Throughout this paper we use the shorthand term "assets" to mean "strategic assets, distinctive competences and key business processes" as defined more fully in Bogaert, Martens and Van Cauwenbergh (*This volume*) and illustrated in their figure 1.

⁸Unless, of course, the asset were substitutable by another asset which could be accessed through one of the other routes (Grant, 1990, Peteraf, 1991, Barney, 1991).

⁹The term was first introduced by Lippman and Rumelt (1982) to describe the phenomenon surrounding business actions and outcomes that makes it difficult for competitors to emulate strategies; Reed and DeFillippi [1990] identify three characteristics of competency that, individually or in combination, can generate causal ambiguity: tacitness, complexity and specificity.

¹⁰See Ghemawat (1991), Ch. 1 and (1986).

¹¹Barriers to asset accumulation are a prime cause of barriers to survival for young firms (See Verdin and Williamson, 1991)

¹²As noted by Prahalad and Hamel (1990), core competences may be improved as a spinoff of the asset accumulation process. Experience of building a dealer network, for example, may help improve a firm's core competence in dealer management.

¹³The implications of the asset accumulation concept and its characteristics for the traditional 'structural' entry barriers have been explored elsewhere; see Verdin and Williamson, 1991 and Williamson and Verdin, 1992.

¹⁴These examples are outlined more fully in Hamel, Doz and Prahalad (1989) and Lewis (1990).

¹⁵For a detailed discussion of the brand-related assets and how they create value, see Aaker (1991).

¹⁶In fact, even in the debate on the competitive impact of advertising it has been argued to be a 'gateway' to entry and evidence has been produced on either side of the issue (See e.g. Verdin and Williamson, 1991). The asset accumulation perspective, however, sheds new light on the question.

¹⁷Verdin and Williamson (1991) and Williamson and Verdin (1992).

¹⁸This partitioning reflects data availability.

¹⁹Information on the composition of these industries in terms of single-plant firms (i.e. 'independent establishments') and plants belonging to multi-plant or diversified firms ('dependent establishments') and their age class was available over the years 1978-1984; establishments could be tracked over time from one point of observation to another allowing for establishment-based entry measures to be derived for each industry by identifying those firms and dependent establishments who were in existence in 1984 but not in 1978. The variables *HSERV*, *TORDER*, *FQPUR*, *MAJOR*, *PUSH*, *CHANNEL*, and *MCUST*, as defined above, were drawn from a U.S. survey of marketing expenditures (Bailey (1975)). *RDSLS* was taken from (National Science Foundation, 1978), *MEDIA* from (PICA: FTC Line of Business, 1976), *K/E* was calculated from (BIE Capital Stock Data Base, 1978) with employment data from the U.S. SBA Data Base, *SKILL* was computed from job classifications contained in the Census of Population (1980) and UN from Kokkelenberg-Sockell (1985). For a full description of the data see MacDonald (1985), Phillips (1985) and Williamson and Verdin (1992).

²⁰Statistical tests on these equations are based on the usual assumption that the error terms *e* and *w* are normally distributed. Theoretically we might expect a skew caused by higher hazard rates of small and medium sized businesses. Unfortunately the dataset does not provide the necessary information on business unit size to assess the impact of this possible distortion.

